WE CLAIM:

1. A disk drive comprising:

(a) a disk comprising a plurality of concentric tracks, each track comprising a plurality of data sectors;

(b) a head actuated radially over the disk;

(c) an input/output (I/O) queue for storing read and write commands received from a host computer; and

(d) a disk controller for performing the commands stored in the I/O queue in an order determined from a rotational positioning optimization (RPO) algorithm, wherein the disk controller for:

selecting a write command from the I/O queue according to the RPO algorithm;

seeking the head to a target track and writing data to a target data sector;

inserting a write verify command into the I/O queue;

selecting the write verify command from the I/O queue according to the RPO algorithm; and

executing the write verify command to verify the recoverability of the data written to the target data sector.

2. The disk drive as recited in claim 1, further comprising a semiconductor memory comprising a plurality of blocks for storing write data received from the host computer and for storing read data read from the disk, wherein the block of semiconductor memory storing the write data for the target data sector is de-allocated after the disk controller executes the write verify command.

3. The disk drive as recited in claim 2, wherein the block of semiconductor memory storing the write data for the target data sector is de-allocated prior to the disk controller executing the write verify command if the amount of free blocks in the semiconductor memory is less than a predetermined threshold.

4. The disk drive as recited in claim 3, wherein:

(a) the I/O queue stores a plurality of write verify commands corresponding to a plurality of written data sectors; and

(b) when the number of free blocks in the semiconductor memory is less than the predetermined threshold, the disk controller uses a predetermined criteria to delete at least one of the write verify commands from the I/O queue and to de-allocate the corresponding block of semiconductor memory.

5. The disk drive as recited in claim 4, wherein the predetermined criteria deletes the write verify command that optimizes the RPO algorithm with respect to the remaining commands in the I/O queue.

6. The disk drive as recited in claim 5, wherein:

(a) each write command comprises data to be written to one or more data sectors; and

(b) the predetermined criteria deletes the write verify command comprising the least number of data sectors to be verified compared to other write verify commands in the I/O queue.

7. The disk drive as recited in claim 1, wherein the disk controller executes the write verify command by seeking the head to the target track and reading data from the target data sector.

8. The disk drive as recited in claim 7, wherein if the read fails the disk controller for:

(a) selecting the write command from the I/O queue according to the RPO algorithm; and

(b) executing the write command.

9. The disk drive as recited in claim 8, wherein if the write verify command fails multiple times, the disk controller for:

(a) inserting a relocate command into the I/O queue, the relocate command for relocating an errant data sector;

(b) selecting the relocate command from the I/O queue according to the RPO algorithm; and

(c) executing the relocate command.

10. The disk drive as recited in claim 3, wherein the disk controller executes the write verify command by seeking the head to the target track and reading data from the target data sector.

11. The disk drive as recited in claim 10, wherein if the read fails and the write data associated with the write command has been de-allocated prior to the disk controller executing the write verify command, the disk controller for:

(a) executing a firmware error-recovery procedure to recover the write data stored in the target data sector;

(b) storing the recovered write data in the semiconductor memory; and

(c) inserting a write command into the I/O queue for writing the write data to the target data sector.

12. A method of executing a write verify operation in a disk drive, the disk drive comprising a disk having a plurality of concentric tracks including a plurality of data sectors, a head actuated radially over the disk, and an input/output (I/O) queue for storing read and write commands received from a host computer, the method comprising the steps of:

(a) selecting a write command from the I/O queue according to a rotational positioning optimization (RPO) algorithm;

(b) seeking the head to a target track and writing data to a target data sector;

(c) inserting a write verify command into the I/O queue;

(d) selecting the write verify command from the I/O queue according to the RPO algorithm; and

(e) executing the write verify command to verify the recoverability of the data written to the target data sector.

13. The method as recited in claim 12, further comprising the steps of:

(a) storing write data received from the host computer in a semiconductor memory; and

(b) de-allocating the block of semiconductor memory storing the write data for the target data sector after executing the write verify command.

14. The method as recited in claim 13, further comprising the step of de-allocating the block of semiconductor memory storing the write data for the target data sector before executing the write verify command if the amount of free blocks in the semiconductor memory is less than a predetermined threshold.

15. The method as recited in claim 14, further comprising the steps of:

(a) storing in the I/O queue a plurality of write verify commands corresponding to a plurality of written data sectors; and

(b) when the number of free blocks in the semiconductor memory is less than the predetermined threshold, using a predetermined criteria to delete at least one of the

write verify commands from the I/O queue and to de-allocate the corresponding block of semiconductor memory.

16. The method as recited in claim 15, wherein the predetermined criteria deletes the write verify command that optimizes the RPO algorithm with respect to the remaining commands in the I/O queue.

17. The method as recited in claim 16, wherein:

(a) each write command comprises data to be written to one or more data sectors; and

(b) the predetermined criteria deletes the write verify command comprising the least number of data sectors to be verified compared to other write verify commands in the I/O queue.

18. The method as recited in claim 12, wherein the step of executing the write verify command comprises the steps of seeking the head to the target track and reading data from the target data sector.

19. The method as recited in claim 18, wherein if the read fails, further comprising the steps of:

(a) selecting the write command from the I/O queue according to the RPO algorithm; and

(b) executing the write command.

20. The method as recited in claim 19, wherein if the write verify command fails multiple times, further comprising the steps of:

(a) inserting a relocate command into the I/O queue, the relocate command for relocating an errant data sector;

(b) selecting the relocate command from the I/O queue according to the RPO algorithm; and

(c) executing the relocate command.

21. The method as recited in claim 14, wherein the step of executing the write verify command comprises the steps of seeking the head to the target track and reading data from the target data sector.

22. The method as recited in claim 21, wherein if the read fails and the write data associated with the write command has been de-allocated prior to performing the write verify command, further comprising the steps of:

(a) executing a firmware error-recovery procedure to recover the write data stored in the target data sector ;

(b) storing the recovered write data in the semiconductor memory; and

(c) inserting a write command into the I/O queue for writing the write data to the target data sector.